
Test Procedure for**CORRELATING CONCRETE STRENGTH TESTS****TxDOT Designation: Tex-427-A****Effective Date: September 2000**

1. SCOPE

- 1.1 Part I of this test method determines 7-day job control strength in flexure, compression, or splitting tension, correlated to a specified 28-day flexural strength.
 - 1.2 Part II of this test method determines 7-day job control strength in compression or splitting tension correlated to a specified 7-day flexural strength.
 - 1.3 Part III of this test method determines a 7-day compressive strength correlated to 28-day design strength.
 - 1.4 The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.
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**PART I—DETERMINING 7-DAY JOB CONTROL STRENGTH
CORRELATED TO A 28-DAY FLEXURAL STRENGTH**

2. SCOPE

- 2.1 Use Part I to determine 7-day job control strength in flexure, compression, or splitting tension, correlated to a specified 28-day flexural strength.
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3. PROCEDURE

- 3.1 Develop concrete mix design in accordance with Construction Bulletin C-11 or ACI 211, except the 28-day flexural strength should meet the minimum specified value when tested in accordance with Tex-448-A.
 - 3.2 Make a laboratory or field batch of concrete using the proposed mix design and the materials used on the job. The batch size should be at least 50% of the mixer's capacity.
 - 3.3 To determine a 7-day flexural strength, make and cure six beams, or to determine 7-day compressive or splitting tensile strength, make and cure three beams and three cylinders from the batch, in accordance with Tex-447-A.
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- 3.4 Determine the 7-day job control strength as follows:
 - 3.4.1 For flexural strength, test three beams at 7 days and three beams at 28 days, in accordance with Tex-447-A.
 - 3.4.2 For compressive strength, test three cylinders at 7 days in accordance with Tex-418-A, and test the three beams at 28 days in accordance with Tex-448-A.
 - 3.4.3 For splitting tensile strength, test three cylinders at 7 days in accordance with Tex-421-A, and test the three beams at 28 days in accordance with Tex-448-A.
- 3.5 Compute the average 7-day flexural, compressive, or splitting tensile strength as appropriate, and compute the average 28-day flexural strength.
- 3.6 If the average 28-day flexural strength meets or exceeds the minimum specified value, the average 7-day strength value determined in Section 3.5 will be the job control strength.
 - 3.6.1 If the average 28-day flexural strength does not meet or exceed the specified minimum 28-day strength, make necessary adjustments to the mix design and repeat the above Sections.

PART II—DETERMINING 7-DAY JOB CONTROL STRENGTH CORRELATED TO A SPECIFIED 7-DAY FLEXURAL STRENGTH

4. SCOPE

- 4.1 Use Part II to determine 7-day job control strength in compression or splitting tension correlated to a specified 7-day flexural strength.

5. PROCEDURE

- 5.1 Develop concrete mix design in accordance with Construction Bulletin C-11 or ACI 211, except the 7-day flexural strength should meet the minimum specified value when tested in accordance with Tex-448-A.
- 5.2 Make a laboratory or field batch of concrete using the proposed mix design and the materials used on the job. The batch size shall be at least 50% of the mixer's capacity.
- 5.3 Make and cure three beams and three cylinders from the batch in accordance with Tex-447-A.
- 5.4 Determine the 7-day job control strength as follows:
 - 5.4.1 Test the three beams in accordance with Tex-448-A to ensure that the flexural strength meets or exceeds the specified strength.

- 5.4.2 For compressive strength, test the three cylinders in accordance with Tex-418-A.
- 5.4.3 For splitting tensile strength, test the three cylinders in accordance with Tex-421-A.
- 5.5 Compute the average 7-day flexural and the average compressive or splitting tensile strength as appropriate.
- 5.6 If the average 7-day flexural strength meets or exceeds the minimum specified value, the average 7-day compressive or splitting tensile strength value determined in Section 5.4 will be the job control strength.
- 5.6.1 If the average 7-day flexural strength does not meet or exceed the specified minimum 7-day strength, make necessary adjustments to the mix design and repeat the above Sections.

PART III—DETERMINING 7-DAY JOB CONTROL STRENGTH CORRELATED TO A 28-DAY COMPRESSIVE STRENGTH

6. SCOPE

- 6.1 Use Part III to determine a 7-day compressive strength correlated to 28-day design strength.

7. PROCEDURE

- 7.1 Develop concrete mix design in accordance with Construction Bulletin C-11 or ACI 211, except the 28-day compressive strength should meet the minimum specified value when tested in accordance with Tex-418-A.
- 7.2 Make a laboratory or field batch of concrete using the proposed mix design and the materials used on the job. The batch size should be at least 50% of the mixer's capacity.
- 7.3 To determine a 7-day compressive strength, make and cure six cylinders from the batch in accordance with Tex-447-A.
- 7.4 To determine the 7-day job control compressive strength, test three cylinders at 7 days and three cylinders at 28 days in accordance with Tex-418-A.
- 7.5 Compute the average 7-day and 28-day compressive strength.
- 7.6 If the average 28-day compressive strength meets or exceeds the minimum specified value, the average 7-day strength value determined in Section 7.5 will be the job control strength.
- 7.6.1 If the average 28-day compressive strength does not meet or exceed the specified minimum 28-day strength, make necessary adjustments to the mix design and repeat the above steps.